

WHAT IS CLAIMED IS:

1. A duobinary optical transmission apparatus comprising:

a light source for generating a carrier wave;

a duobinary precoder for encoding an input electric signal;

5 a semiconductor optical amplification unit to amplify the encoded signal from the duobinary precoder, wherein the amplification unit receives an optical amplification gain difference that varies with a bias current combined with the encoded signal; and

an optical band pass filter for receiving a phase-modulated optical signal from the semiconductor optical amplification unit, filtering the received optical signal to a
10 prescribed bandwidth.

2. The duobinary optical transmission apparatus as set forth in claim 1, wherein the input electric signal is a non return to zero electric signal.

3. The duobinary optical transmission apparatus as set forth in claim 3, wherein the optical band pass filter generates a duobinary optical signal.

4. The duobinary optical transmission apparatus as set forth in claim 1, wherein the semiconductor optical amplification unit includes:

a semiconductor optical amplifier; and

5 a DC coupling line to provide the semiconductor optical amplifier with the bias current.

5. The duobinary optical transmission apparatus as set forth in claim 4, wherein the semiconductor optical amplification unit further includes an optical isolator to prevent an optical signal from being reflected at an output end of the semiconductor optical amplifier.

10 6. The duobinary optical transmission apparatus as set forth in claim 4, wherein the semiconductor optical amplification unit controls phase difference characteristics of an optical signal by adjusting a modulation index of the semiconductor optical amplifier.

7. The duobinary optical transmission apparatus as set forth in claim 3, wherein the optical band pass filter controls transmission characteristics of a duobinary optical signal by adjusting its own bandwidth.

8. The duobinary optical transmission apparatus as set forth in claim 3, wherein the light source is a semiconductor laser.

9. The duobinary optical transmission apparatus as set forth in claim 8, wherein the semiconductor optical amplifier has a single integrated circuit configuration along with the semiconductor laser and the optical band pass filter.

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